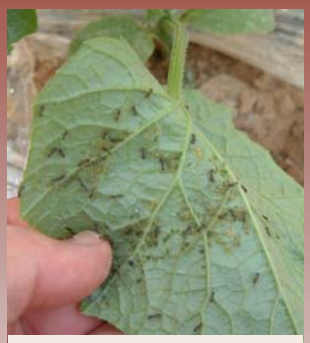
APHIDS

Colony of Green Apple Aphid—looks alarming but is not serious except in nursery



Ants 'farming' aphids in cucumber

Brown aphids on wheat

Ladybird larvae hunting aphids in wheat

Ladybird eggs in aphid colony

Aphid carcass after emergence of parasite

APHIDS

Description

(This card describes aphids in general: see cards for individual species.)

Aphid species are pests of all crops. They debilitate the crop by feeding on the sap (e.g. Grain Aphid—*Sitobion avenae*), but some species inject chemicals that distort fruit and leaves (e.g. Mealy plum aphid—*Hyalopterus pruni*), some secrete honeydew (e.g. Corn Leaf Aphid—*Rhopalosiphum maidis*) and others spread virus diseases (e.g. Peach Potato Aphid—*Myzus persicae*).

Aphids may be green, yellow, brown, red, or black depending on the species and the plants they feed on. Most species have a pair of tube-like structures called siphunculi or cornicles projecting backwards out of the hind end of their bodies. Siphunculi distinguishes aphids from all other insects. Unlike leafhoppers, bugs and most other insects, aphids do not move when disturbed.

Under favourable conditions, aphids reproduce rapidly giving birth to live females without the presence of males. Sexual reproduction often takes place when winged forms migrate to lay eggs at over-wintering sites.

Monitoring Example

Green apple aphids: Inspect new shoots during summer. Treatment threshold when 75% of terminals infested or when 2 to 3 infested leaves are found per shoot.

Control

Natural enemies are very important in aphid control. Common enemies include: ladybirds, lacewings, hoverflies (Syrphids), anthocorid bugs, parasitic wasps, fungi. Ants 'farm' aphids for the honeydew they secrete and defend them from enemies. Ant control is important—see card on ants.

On fruit trees, winter oil sprays are effective on aphid eggs.

Synthetic pyrethroids, Chlorpyrifos or Dimethoate are effective against aphids, but are not recommended for IPM as beneficial insects will be killed. The following modern pesticides are all active against aphids: imidacloprid, thiacloprid (and other neo-nicotinoids), pyridaben, pymetrozine, pirimicarb.

APHIDS—PEACH POTATO APHID (*Myzus persicae*)

Serious aphid damage to peach

Alfalfa Mosaic Virus on tomato spread by Peach Potato Aphid

Cucumber Mosaic Virus

Peach potato aphid colony

Alate (flying) adult

Apterous nymph

PEACH POTATO APHID

Description

Peach Potato Aphid (PPA) (Green Peach Aphid) attacks a wide variety of plants worldwide. Not only does it damage plants directly but it also spreads 200 virus diseases. Sometimes needs controlling on fruit trees, but summer stage on vegetables (e.g. Potatoes and Cucurbits) causes much damage.

Overwinters in the egg stage on the bark or buds. Eggs begin hatching before buds open in March . Nymphs feed on unopened buds early in spring. After bud break feeding causes leaves to curl protecting aphids while they feed. Aphid reaches adult stage in 2 to 3 weeks and begin to produce nymphs asexually. In each generation some winged aphids are produced which fly to vegetable plants and weeds for summer. In fall males and females return to the orchard to mate and lay overwintering eggs on the bark.

Monitoring

Where virus diseases are a problem, plants must be inspected weekly and this aphid must be controlled even if present at a very low density. There is no threshold for treatment: treat if present.

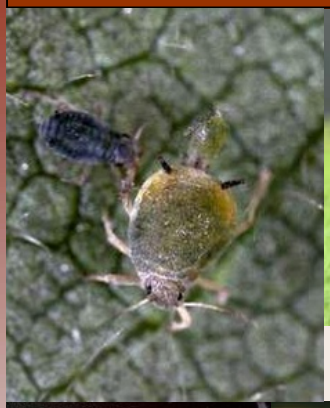
Control

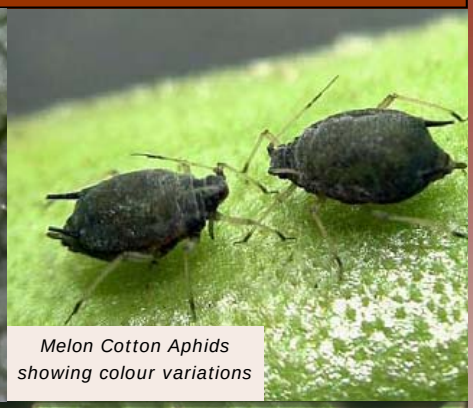
Plant virus-free seed and control weeds. Viruses spread by PPA affect potatoes, cucurbits (watermelon, marrow, cucumber), tomatoes, cabbage, spinach, lettuce beans and alfalfa. Crop covers or 'fleeces' are useful for keeping out early infestations on vegetables .

Imidacloprid, acetamiprid or thiamethoxam—apply at planting of vegetables and incorporate into root zone. N.B. To prevent resistance, do not use these neonicotinoids more than once per year.

Synthetic pyrethroids (cypermethrin, lambda-cyhalothrin, bifenthrin), dimethoate, malathion or chlorpyrifos are all effective against aphids, but are not recommended for IPM as beneficial insects will be killed. The following modern pesticides are all active against aphids: imidacloprid, thiacloprid, acetamiprid or thiamethoxam (all neo-nicotinoids), pyridaben, pymetrozine. Pirimicarb is also highly effective and safe to beneficial insects.

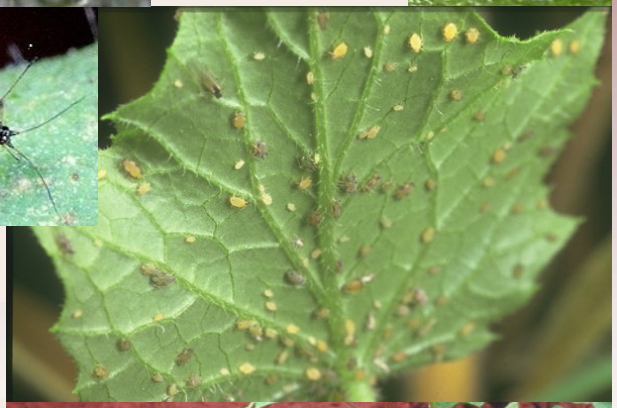
Aphids—Melon Cotton Aphid (*Aphis gossypii*)





Melon Cotton Aphids showing colour variations

Alate or winged form



Aphid damage to young cotton

MELON COTTON APHID

Description

Melon Cotton Aphid (MCA) attacks a wide variety of plants. As well as cotton and cucurbits, it can attack citrus, aubergines, okra, peppers, carrots and strawberries. In the spring, nymphs feed on the winter host. Alate (flying) forms soon develop and spread to cotton and vegetables. Adults give birth to live females all year round, depending on climate—there is no egg stage.

Not only does it damage plants directly but it also spreads 50 virus diseases (e.g. Tristeza citrus fruit virus, cucumber mosaic, zucchini yellow, and watermelon mosaic viruses). It produces copious honeydew which turns black with sooty mould on fruit and vegetables. The honeydew is very attractive to ants.

Monitoring

Start monitoring MCA after formation of first true leaf, note the number present and also their form: The small yellow aphids develop slowly from newborn nymph to adult and do not produce many offspring; thus, their populations rarely increase rapidly. The larger, darker aphids (green and black) develop more rapidly and the population can grow very fast.

On cotton, light infestations mid-season (20/leaf) do not cause damage, but later, as few as 5/leaf can result in honeydew contamination of lint.
In cucurbits, viruses are more problem than the direct feeding of aphids although honeydew can disfigure fruits.

Control

Crop covers are useful for keeping out early infestations on vegetables .

Natural enemies of MCA are many, but they will not prevent virus transmission. Use Neonicotinoids—Imidacloprid, acetamiprid or thiamethoxam. To prevent resistance, use only once per year. Alternate with pymetrozine.

MCA is becoming resistant to synthetic pyrethroids (cypermethrin, lambda-cyhalothrin, bifenthrin), dimethoate, malathion or chlorpyrifos and these chemicals are not recommended for IPM early in the cotton season as beneficial insects will be killed making the aphid problem worse. However, they are useful alternatives to neonicotinoids late in the year.

WOOLLY APHID (*Eriosoma lanigerum*)

Woolly Apple aphid parasitized by Aphelinus

Aphelinus wasp

Detail showing filamentous wax

Colony on trunk of apple
On the scar tissue formed after cutting of a twig.

WOOLLY APHID

Description

Woolly Aphid are hidden by a woolly and filamentous wax covering. Adults overwinter on bark, in cankers or on roots give birth in spring to live female nymphs. Heavy infestations form dense whitish colonies. Adults and nymphs feed by sucking up sap from woody parts or tender shoots but never from leaves. Injection of toxic saliva cause blisters and cankers. Flying aphids appear in July to form new colonies.

Monitoring

Woolly Aphid usually spread from low in the tree or from the rootstock. Monitor for colonies after blossom and check for predation by *Aphelinus mali:* hardened, black, aphid mummies with a circular exit hole cut by the adult parasite as it emerges from the aphid.

Threshold for woolly aphid: 4% of trees with aphids on extension growth.

Control

Woolly Aphid is not controlled by imidacloprid: the usual treatment is pirimicarb. For small areas, painting with alcohol is effective. Plant new apple orchards on resistant rootstocks.

The parasitic wasp, *A. mali*, was introduced to Afghanistan but has not been seen recently. Earwigs are good woolly aphid predators, but are not common in Afghanistan.

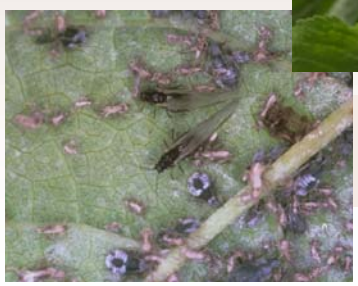
Mealy Plum Aphid (*Hyalopterus pruni*)

Leaf Curl Plum Aphid (*Brachycaudus helichrysi*)

Mealy Plum Aphid

Leaf Curl Plum Aphid

Mealy Plum Aphid: typical 'mealy' appearance



Colony showing winged aphids and aphid skins.

Mealy Plum Aphid and Leaf Curl Plum Aphid

Description

Mealy Plum Aphids overwinter as eggs on the primary host: plum, hawthorn and sometimes on apricot and peach. They hatch in March/April and form dense colonies feeding on the underside of leaves. Winged aphids appear in summer and spread to secondary host (reeds), but many remain on plum. In autumn winged male and females appear and lay eggs on the primary host.

Leaf Curl Plum aphid has a similar life cycle. It hatches in spring and curls leaves tightly. In summer it migrates to its secondary hosts in the daisy or clover families. It is a vector of Plum Pox Virus (Sharka).

Aphids cause leaf drop and shrivelling of fruit. Honeydew spoils fruit.

Monitoring

The best indicator is orchard history: if aphids were a problem in the summer, treat in early winter or pre-bloom.

Sample for eggs during winter dormancy. Dormant spur samples are taken once a year between mid-November and the end of January to look for scale, mealy bug, mites and aphids. Collect 100 spurs at random in orchard from older wood and examine with a hand lens. The threshold for aphids is zero—if eggs are present a treatment will be necessary.

Control

A late autumn (November 1) spray to remove leaves early will help to control aphids by disrupting their lifecycle. Copper or Zinc Sulphate sprays are used.

Winter oil sprays to control scale will also control aphids but are harmful to many natural enemies too.

If winter oil is not used, spray immediately pre– or post-bloom but not during bloom with imidacloprid, acetamiprid or thiamethoxam. Do not use more than once during season. In summer, use summer spraying oil. Pirimicarb is also effective and safe to most beneficial insects.